

CLAIMS

What is claimed is:

1. A method of finding at least one record in a database corresponding to a digital versatile disc, comprising:

receiving unique information about an unidentified digital versatile disc, including at least one of a title of the unidentified digital versatile disc, a volume name of the unidentified digital versatile disc, time stamp information for creation of a master of the unidentified digital versatile disc, a number of titles on the unidentified digital versatile disc, a number of chapters per title on the unidentified digital versatile disc, and a number of frames per chapter on the unidentified digital versatile disc; and

identifying possibly matching records in a database of information about digital versatile discs using the unique information from the unidentified digital versatile disc.

2. A method as recited in claim 1, further comprising reading at least one of the volume name of the unidentified digital versatile disc and the time stamp information for creation of a master of the unidentified digital versatile disc from Universal Disk Format sectors of the unidentified digital versatile disc.

3. A method as recited in claim 1, further comprising reading at least one of the number of titles, the number of chapters per title, and the number of frames per chapter from Video Manager Information and Video Title Set Information data on the unidentified digital versatile disc.

4. A method as recited in claim 1,
further comprising storing first identifying keys for the information in the database, each first identifying key having been generated based on total number of titles, number of chapters per title and number of frames per chapter, and

wherein said identifying comprises

generating a first search key using the number of titles on the unidentified digital versatile disc, the number of chapters per title on the unidentified digital versatile disc, and the number of frames per chapter on the unidentified digital versatile disc; and

using the first search key and the first identifying keys to identify the possibly matching records.

5. A method as recited in claim 4, further comprising:

comparing the number of titles and the number of chapters per title of a corresponding digital versatile disc in each of the possibly matching records with the number of titles and the number of chapters per title of the unidentified digital versatile disc to find a best matching record and to determine whether the best matching record corresponds to the unidentified digital versatile disc; and

storing at least one of the number of titles and the number of chapters per title of the unidentified digital versatile disc in the best matching record if said comparing determines that the best matching record corresponds to the unidentified digital versatile disc and any differences exist between the number of titles and the number of chapters per title of the unidentified digital versatile disc and the best matching record.

6. A method as recited in claim 4, wherein each of the first search key and the first identifying keys is a 16 byte hash code generated by a message digest algorithm.

7. A method as recited in claim 4,

further comprising storing second identifying keys for the information in the database, each second identifying key having been generated by concatenating a predetermined number of characters of a volume name and hash coded time stamp information, and

wherein said identifying further comprises

generating a second search key by concatenating a predetermined number of characters of the volume name of the unidentified digital versatile disc, and a hash

code derived from the time stamp information for creation of the master for the unidentified digital versatile disc; and

using the second search key and the second identifying keys to identify the possibly matching records if no possibly matching records are found using the first search key and the first identifying keys.

8. A method as recited in claim 7, further comprising:

comparing the number of titles and the number of chapters per title of a corresponding digital versatile disc in each of the possibly matching records with the number of titles and the number of chapters per title of the unidentified digital versatile disc to find a best matching record and to determine whether the best matching record corresponds to the unidentified digital versatile disc; and

storing at least one of the number of titles and the number of chapters per title of the unidentified digital versatile disc in the best matching record if said comparing determines that the best matching record corresponds to the unidentified digital versatile disc and any differences exist between the number of titles and the number of chapters per title of the unidentified digital versatile disc and the best matching record.

9. A method as recited in claim 7,

further comprising storing third identifying keys for the information in the database, each third identifying key having been generated based on number of chapters and number of frames per chapter for a title having a largest number of chapters on a corresponding digital versatile disc, and

wherein said identifying further comprises

generating a third search key using the number of chapters and the number of frames per chapter in a title having a largest number of chapters on the unidentified digital versatile disc; and

using the third search key and the third identifying keys to identify the possibly matching records if no possibly matching records are found using the first and second search keys and the first and second identifying keys.

10. A method as recited in claim 9, further comprising:

comparing the number of titles and the number of chapters per title of a corresponding digital versatile disc in each of the possibly matching records with the number of titles and the number of chapters per title of the unidentified digital versatile disc to find a best matching record and to determine whether the best matching record corresponds to the unidentified digital versatile disc; and

storing at least one of the number of titles and the number of chapters per title of the unidentified digital versatile disc in the best matching record if said comparing determines that the best matching record corresponds to the unidentified digital versatile disc and any differences exist between the number of titles and the number of chapters per title of the unidentified digital versatile disc and the best matching record.

11. A method as recited in claim 9, wherein each of the first and third search keys and the first and third identifying keys is a 16 byte hash code generated by a message digest algorithm.

12. A method as recited in claim 9,

further comprising storing fourth identifying keys for the information in the database, each fourth identifying key having been generated based on the number of chapters and the number of frames per chapter for the title having the largest number of chapters on the corresponding digital versatile disc and using an approximation algorithm that identifies the information with less precision than the third identifying keys, and

wherein said identifying further comprises

generating a fourth search key based on the number of chapters and the number of frames per chapter in a title having a largest number of chapters on the unidentified digital versatile disc and using the approximation algorithm; and

using the fourth search key and the fourth identifying keys to identify the possibly matching records if no possibly matching records are found using the first, second and third search keys and the first, second and third identifying keys.

13. A method as recited in claim 12, further comprising selecting a best matching record from among a plurality of possibly matching records obtained by said identifying, based on a closest match between the number of frames per chapter of the unidentified digital versatile disc and the possibly matching records.

14. A method as recited in claim 13, further comprising:

comparing the number of titles and the number of chapters per title of the corresponding digital versatile disc for the best matching record with the number of titles and the number of chapters per title of the unidentified digital versatile disc to determine whether the best matching record corresponds to the unidentified digital versatile disc; and

storing at least one of the number of titles and the number of chapters per title of the unidentified digital versatile disc in the best matching record if said comparing determines that the best matching record corresponds to the unidentified digital versatile disc and any differences exist between the number of titles and the number of chapters per title of the unidentified digital versatile disc and the best matching record.

15. A method as recited in claim 12, wherein said identifying further comprises comparing the title of the unidentified digital versatile disc with titles stored in the information in the database if no possibly matching records are found using the first through fourth search keys and the first through fourth identifying keys.

16. A method of searching for a match in a database, comprising:

obtaining a unique search key based on uniquely identifying information from data to be matched with a record in the database;

using the unique search key to search for a matching record in the database;

obtaining a non-unique search key based on non-uniquely identifying information from the data to be matched, if no match is found using the unique search key;

using the non-unique search key to search for at least one possibly matching record in the database; and

repeating said obtaining and said using of non-unique search keys based on progressively less specific information from the data to be matched, each time no possibly matching records are found, until predefined least specific information is used.

17. A method as recited in claim 16, wherein the unique and non-unique search keys include a hash code of at least a portion of the uniquely identifying information and the non-uniquely identifying information, respectively.

18. A method as recited in claim 16, further comprising storing, in relationship to the data to be matched, related data from the matching record in the database, if the matching record is found.

19. A method as recited in claim 16, further comprising storing, in relationship to the data to be matched, related data from a record in the database most closely matching the data to be matched, if at least one possibly matching record is found.

20. A method as recited in claim 19, further comprising using as the related information, a portion of the data to be matched, if no possibly matching records are found.

21. A system for finding at least one record in a database corresponding to a digital versatile disc, comprising:

an input unit to obtain data from an unidentified digital versatile disc, including at least one of a title of the unidentified digital versatile disc, a volume name of the unidentified digital versatile disc, time stamp information for creation of a master of the unidentified digital versatile disc, a number of titles on the unidentified digital versatile disc, a number of chapters per title on the unidentified digital versatile disc, and a number of frames per chapter on the unidentified digital versatile disc;

a storage unit to store a database of information about digital versatile discs; and

a processor, coupled to said input unit and said storage unit, to identify possibly matching records in the database of information about digital versatile discs using the unique information from the unidentified digital versatile disc.

22. A system as recited in claim 21, wherein said processor, said storage unit and said input unit are connected locally.

23. A system as recited in claim 21, further comprising connections to a computer network to provide communication between said processor and said storage unit disposed at remote locations.

24. A system for finding at least one record in a database corresponding to a digital versatile disc, comprising:

means for receiving unique information about an unidentified digital versatile disc, including at least one of a title of the unidentified digital versatile disc, a volume name of the unidentified digital versatile disc, time stamp information for creation of a master of the unidentified digital versatile disc, a number of titles on the unidentified digital versatile disc, a number of chapters per title on the unidentified digital versatile disc, and a number of frames per chapter on the unidentified digital versatile disc; and

means for identifying possibly matching records in a database of information about digital versatile discs using the unique information from the unidentified digital versatile disc.